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October 12, 2004

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APPLICATION NUMBER: ***10/722,399***
FILING DATE: ***November 28, 2003***

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN COMPLIANCE WITH RULE 17.1(a) OR (b)

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

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Certifying Officer

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22278 U.S.PTO 10/722399 112803

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	14537
First Inventor	JACKSON, Reinhard E
Title	Portable Canoe Propulsion
Express Mail Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

1. ☑ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☑ Applicant claims small entity status.
See 37 CFR 1.27.
3. ☑ Specification [*Total Pages* 10]
(preferred arrangement set forth below)
- Descriptive title of the Invention
- Cross Reference to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to sequence listing, a table, or a computer program listing appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings *(if filed)*
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

4. ☑ Drawing(s) (*35 U.S.C. 113*) [*Total Sheets* 7]
5. Oath or Declaration [*Total Sheets* 2]
a. ☑ Newly executed (original or copy)
b. ☐ Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76
7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program *(Appendix)*
8. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
a. ☐ Computer Readable Form (CRF)
b. Specification Sequence Listing on:
i. ☐ CD-ROM or CD-R (2 copies); or
ii. ☐ Paper
c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☐ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(b) Statement *(when there is an assignee)* ☑ Power of Attorney
11. ☐ English Translation Document *(if applicable)*
12. ☑ Information Disclosure Statement (IDS)/PTO-1449 ☑ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☑ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Nonpublication Request under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
17. ☐ Other: .....

18. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:*

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: .....

Prior application information: *Examiner* _____ *Art Unit:* _____

For CONTINUATION OF DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS

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Name (Print/Type)	Ralph A. Dowell	*Registration No. (Attorney/Agent)*	26,868
Signature		*Date*	11-28-03

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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13281

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U.S. PTO

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 385.00

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	JACKSON, Reinhard E.
Examiner Name	
Art Unit	
Attorney Docket No.	14537

METHOD OF PAYMENT *(check all that apply)*

☑ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☑ Deposit Account:

Deposit Account Number: 04-1517 deficiencies only

Deposit Account Name:

The Director is authorized to: *(check all that apply)*

☑ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	385.00
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($) 385.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims		Fee from below		Fee Paid
Total Claims	14	-20** =		X	=
Independent Claims	1	- 3** =		X	=
Multiple Dependent					=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid **SUBTOTAL (3)** ($)

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	Ralph A. Dowell	*Registration No. (Attorney/Agent)*	26,868	*Telephone*	703-415-2555
Signature				*Date*	11-28-03

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PORTABLE CANOE PROPULSION SYSTEM

Field of Invention

This invention relates to a portable propulsion device for use in a small watercraft such as a canoe. More particularly, this invention relates a portable pedal and seat device for driving an outboard propeller pivotally mounted alongside the canoe for movement between an operative position wherein the propeller is in the water and an inoperative position wherin the propeller is out of the water and the propeller drive shaft is in a plane parallel the gunwhale of the canoe.

Background of Invention

Pedal operated watercraft, such as canoes, are well known in the art and there are numerous patents directed to specific features thereof. Such devices generally comprise a frame structure, with or without a seat, having a pedal crank and sprocket system connected, by way of a chain, to a drive shaft which drives, via a series of gears and pinions, a vertically mounted drive shaft at the stern of the watercraft which in turn drives a propeller mounted on a horizontal axis. Such devices are relatively complex and involve a long gear train which is inherently expensive. The rigidly mounted vertical shaft at the stern to drive the propeller implies that the propeller is at a fixed depth relative to the keel of the watercraft, and it is difficult, if not impossible, for a canoeist to turn around in a relatively unstable canoe to reach the vertically mounted drive shaft at the stern so as to raise the propellor out of the water when not in use or in shallow water. There is a need, therefore, for a simple pedal operated propulsion system in which the propeller can be raised or lowered easily by the canoeist without moving from

his seat or even turning to face the rear of the canoe. Preferably, the canoeist should be seated as low as possible in the canoe for stability reasons and the pedal device should incorporate both the seat and the crank mechanism and should be simply placed across the gunwhales of the canoe without needing clamps, bolts or other devices to secure it in place.

Object of invention.

It is an object of the present invention to provide a portable crank–operated, propeller driven, propulsion system for use in a canoe or other small watercraft, in which the propeller is mounted on a propeller shaft which can be raised to, or lowered from, a substantially horizontal position parallel to the gunwhale of the canoe to an operative position in which the propellor shaft is at an acute angle relative to the gunwhale and the propeller is at any selected depth in the water.

Brief Statement of Invention.

By one aspect of this invention there is provided a portable, pedal driven propulsion device, for use in a watercraft having gunwhales, comprising:

(a) a substantially quadrilateral frame adapted to be releasably mounted on the gunwhales of said watercraft;

(b) operator seat means mounted on said quadrilateral frame;

(c) pedal crank means mounted forwardly of, and depending from, said quadrilateral frame and operable by an operator sitting on said seat means;

(d) a gear box pivotally mounted, on said quadrilateral frame so as to lie outboard of one of said gunwhales and forward of said operator seat means when in

operative position;

(e) means to transmit motive power generated by said pedal crank means to said gear box; and

(f) longitudinal drive shaft means operatively connected at one end thereof to said gear box and, at a second end thereof, to a propeller means;

said gear box and drive shaft means being adapted to be pivoted, when mounted on said watercraft, about a horizontal transverse axis so as to raise said propeller means to an inoperable position wherein said drive shaft means is substantially parallel to said one gunwhale, and lower said propeller means to an operative position wherein said drive shaft means is at an acute angle relative to said gunwhale.

Brief Description of Drawings.

Fig. 1 is an isometric side view of one embodiment of the present invention, mounted on a canoe;

Fig. 2 is an oblique isometric front view of the embodiment of Fig. 1;

Fig. 3 is an oblique isometric rear view of the embodiment of Fig. 1;

Fig. 4 is a side view, partly in section, of the embodiment of Fig. 1;

Fig. 5 is a plan view of the embodiment of Fig. 1;

Fig. 6 is a front view of the embodiment of Fig. 1;

Fig. 7 is an enlarged detail view of the drive shaft shown in Fig. 6 in the engaged position; and

Fig. 8 is an enlarged detail view of the drive shaft shown in Fig. 6, in the

disengaged position.

Detailed Description of Preferred Embodiments.

In Fig. 1 there is shown an isometric side view of one embodiment of the present invention with the drive shaft 2 in the angled, or lowered, position along the side of the canoe 1 upon which the device has been placed and rests on the gunwhales thereof. As seen most clearly in Fig. 5, a quadrilateral frame comprising a pair of parallel, longitudinally extending, tubular members 11,12 and a pair of parallel, transversely extending members 13,14, rests on the gunwhales 15,16 of canoe 1, immediately behind the central thwart 17 thereof and supports seat 4, preferably but not essentially adjustably, therebetween. It has been found that clamps, bolts or the like are not required to secure the frame to the canoe, but preferably the ends of transverse members are covered with a non-slip material, such as rubber, to provide additional grip and to reduce slippage. As seen in Fig. 1, a canoe operator 3, seated on seat 4 propels the canoe 1 by means of pedals 5 and cranks 6 , mounted on a tubular member 18 forwardly of the quadrilateral frame on the longitudinal centre line and near the bottom of the canoe. Pedals 5 and cranks 6 are operatively mounted on toothed sprocket 7 which drives endless chain 8. Chain 8 is operatively connected to rear sprocket 9, mounted for rotation about a horizontal transverse axis on a lower transverse drive shaft 10, contained within drive tube 19 which is supported by a tubular member 20 depending from transverse tubular member 13. The outer end of shaft 10 is supported by bearing 21 and terminates in a sprocket 22 to drive endless chain 23 and sprocket 24. Sprocket 24 is mounted to one end of a transvers drive shaft 25 which in turn is

rotatably mounted in bearing 26 on transverse member 13 at a level slightly above gunwhale 16. The outboard end of shaft 25 is provided with a hub 27 having a hexagonal axial bore 28 therein. A spring loaded hexagonal shaft 29 is slideably mounted in an axial bore of a drive shaft 30 so that an end 31 of shaft 29 can releasably engage in bore 28, as seen in Fig. 7. Shaft 30 is rotatably mounted within a tubular housing 31 and axially moveable so as to disengage shaft 29 when required and to align spring-loaded shaft 29 with bore 28 so as to engage therewith, one end of which supports bearing 26 and the other end of which rotatably supports gear box housing 32. A bevel gear 33, contained within housing 32, is splined to a shaft 34, rotatably supported by bearing 35, which is in turn axially splined to shaft 30. Bevel gear 33 operatively engages bevel gear 34, also contained within housing 32, axially mounted on a propeller drive shaft 35 which is supported by bearings 36,37 within housing 32 and contained within a tubular casing 38. A cutlass bearing 39 is provided at the lower end of housing 38 to support shaft 35 adjacent a propeller 40. It will be appreciated that shaft 35 and tubular casing 38 can be moved in a vertical plane by rotating gear box housing 32 about a horizontal transverse axis provided by housing 31, so that shaft 35 can be raised to a horizontal, inoperative, position parallel the gunwhale 16 in which propeller 40 is raised out of the water, and lowered to an angled, operative, position as seen in Fig.4, in which the propeller 40 is below the water level. Preferably, housing 38 is supported, intermediate the ends thereof by either a hanger 41 adjustably suspended from transverse member 14 or a pair of hangers 41, 42 suspended from transverse member 14, so as to retain housing 38 in the operative position or the inoperative

position as selected by the operator simply by reaching over the side of the canoe and without needing to turn or reach towards the stern of the canoe.

As seen in Figs. 2,3, 4 and 5, longitudinal member 12 is somewhat longer than longitudinal member 11 and is angled outwardly towards the stern to support a rudder post housing 43, vertical rudder post 44 and rudder 45. A control arm 46 is mounted on rudder post 44, perpendicular to rudder 45, and pivotally mounted to a control rod or tiller 47 for operation by operator 3 to steer the canoe. Preferably , but not essentially, rudder 45 is axially aligned with propeller 40.

It will be appreciated that many modifications may be made without departing from the spirit and scope of this invention as defined by the appended claims. For example, the conventional toothed sprockets 7,9,22 and 24 may, if desired be replaced with similarly conventional smooth pulley wheels with associated ribbed or plain rubber drive belts.

I CLAIM.

1. A portable, pedal driven propulsion device, for use in a watercraft having gunwhales, comprising:

(a) a substantially quadrilateral frame adapted to be releasably mounted on the gunwhales of said watercraft;

(b) operator seat means mounted on said quadrilateral frame;

(c) pedal crank means mounted forwardly of, and depending from, said quadrilateral frame and operable by an operator sitting on said seat means;

(d) a gear box pivotally mounted, on said quadrilateral frame so as to lie outboard of one of said gunwhales and forward of said operator seat means when in operative position;

(e) means to transmit motive power generated by said pedal crank means to said gear box; and

(f) longitudinal drive shaft means operatively connected at one end thereof to said gear box and, at a second end thereof, to a propeller means;

said gear box and longitudinal drive shaft means being adapted to be pivoted, when mounted on said watercraft, about a horizontal transverse axis so as to raise said propeller means to an inoperable position wherein said drive shaft means is substantially parallel to said one gunwhale, and lower said propeller means to an operative position wherein said drive shaft means is at an acute angle relative to said gunwhale.

2. A propulsion device as claimed in claim 1, wherein said drive shaft is rotatably mounted within a longitudinal tube means.

3. A propulsion device as claimed in claim 2, including means to support said tube means, intermediate the ends thereof, in a selected one of said operative and inoperative positions.

4. A propulsion device as claimed in claim 2 wherein said means to transmit power comprises first drive means operatively connected to a first end of a first transverse drive shaft, second drive means operatively connected to a second end of said first transverse drive shaft, a second transverse drive shaft means operatively connected to said second drive means at a first end thereof and to said gear box at a second end thereof.

5. A propulsion device as claimed in claim 4 wherein said second transverse drive shaft means includes slideable means to selectively engage and disengage said second chain drive means and said gear box.

6. A propulsion device as claimed in claim 5 wherein said second transverse drive shaft means is rotatably mounted in transverse tube means mounted on said quadrilateral frame.

7. A propulsion device as claimed in claim 6 wherein said second transverse drive shaft means includes first bevel gear means at said second end thereof.

8. A propulsion device as claimed in claim 7 wherein said longitudinal drive shaft means includes second bevel gear means at said one end thereof.

9. A propulsion device as claimed in claim 8 wherein said first and second

bevel gear means are contained within said gear box and mounted at right angles to each other for meshing engagement.

10. A propulsion device as claimed in claim 9 when mounted on said watercraft.

11. A propulsion device as claimed in claim 10 wherein said watercraft is a canoe.

12. A propulsion device as claimed in claim 1 wherein said operator seat means is adjustably mounted on said quadrilateral frame.

13. A propulsion device as claimed in claim 1 wherein ssaid operator seat means is rigidly mounted on said quadrilateral frame.

14. A propulsion device as claimed in claim 4 wherein said first and second drive means comprise chain drive means.

Abstract of Disclosure

A portable pedal driven propulsion device for a small watercraft in which power from crank operated pedals is transmitted to a pivotally mounted gearbox on the outside of the watercraft adjacent the operator. A longitudinal drive shaft is connected, at one end, to the gear box and, at the other end, to a propeller so that the drive shaft and propeller can be moved selectively between a raised inoperative position and a lowered operative position.

PTO/SB/01 (08-03)
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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☑ Declaration Submitted With Initial Filing **OR** ☐ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Number	14537
First Named Inventor	JACKSON, Reinhard E.
COMPLETE IF KNOWN	
Application Number	
Filing Date	
Art Unit	
Examiner Name	

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

PORTABLE CANOE PROPULSION SYSTEM

(Title of the Invention)

the specification of which

☑ is attached hereto

OR

☐ was filed on (MM/DD/YYYY). ☐ as United States Application Number or PCT International Application Number ☐ and was amended on (MM/DD/YYYY) ☐ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? Yes	No
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

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DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☑ Customer Number: 000293 OR ☑ Correspondence address below

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Suite 309, 1215 Jefferson Davis Highway

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Arlington,	VA	22202-3214

Country	Telephone	Fax
U.S.A.	703-415-2555	703-415-2559

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

NAME OF SOLE OR FIRST INVENTOR: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])	Family Name or Surname
Reinhard Erwin	JACKSON

Inventor's Signature: Reinhard Jackson — Date: 21.11.03

Residence: City	State	Country	Citizenship
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City	State	ZIP	Country
RR#3, Bath	ON	K0H 1G0	Canada

NAME OF SECOND INVENTOR: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])	Family Name or Surname

Inventor's Signature — Date

Residence: City	State	Country	Citizenship

Mailing Address

City	State	ZIP	Country

☐ Additional inventors or a legal representative are being named on the _____ supplemental sheet(s) PTO/SB/02A or 02LR attached hereto.

Please type a plus sign (+) inside this box → [+]

PTO/SB/81 (10-00)
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POWER OF ATTORNEY OR AUTHORIZATION OF AGENT

Application Number	
Filing Date	
First Named Inventor	JACKSON, Reinhard Erwin
Group Art Unit	
Examiner Name	
Attorney Docket Number	14537

I hereby appoint:

[x] Practitioners at Customer Number 000293 →

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[x] Practitioner(s) named below:

Name	Registration Number
Ralph A. Dowell	26,868

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

[ ] The above-mentioned Customer Number.

OR

[x] Firm *or* Individual Name	Ralph A. Dowell				
Address	Suite 309				
Address	1215 Jefferson Davis Highway				
City	Arlington	State	VA	Zip	22202-3124
Country	U.S.A.				
Telephone	703-415-2555	Fax	703-415-2559		

I am the:

[x] Applicant/Inventor.

[ ] Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

SIGNATURE of Applicant or Assignee of Record

Name	Reinhard Erwin Jackson
Signature	Reinhard Jackson
Date	01.11.03

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

[ ] *Total of 1 forms are submitted.

Burden Hour Statement: This form is estimated to take 3 minutes to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

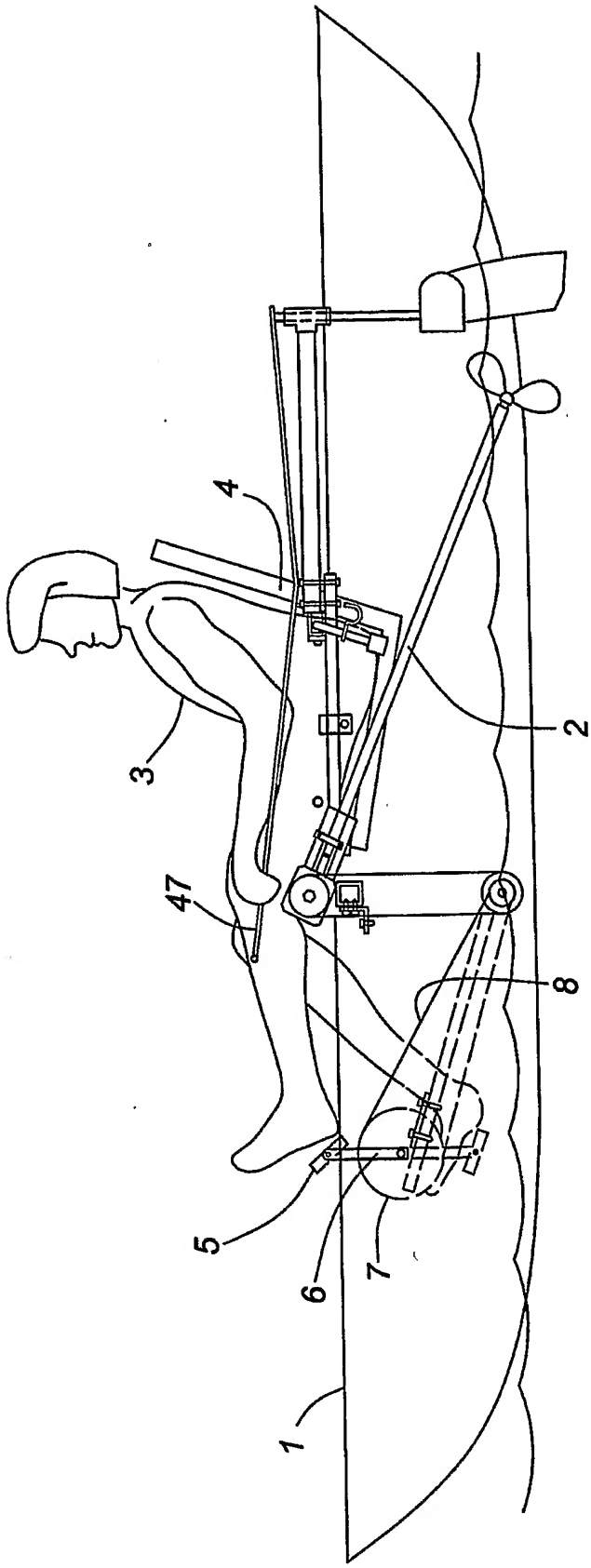


FIG. 1

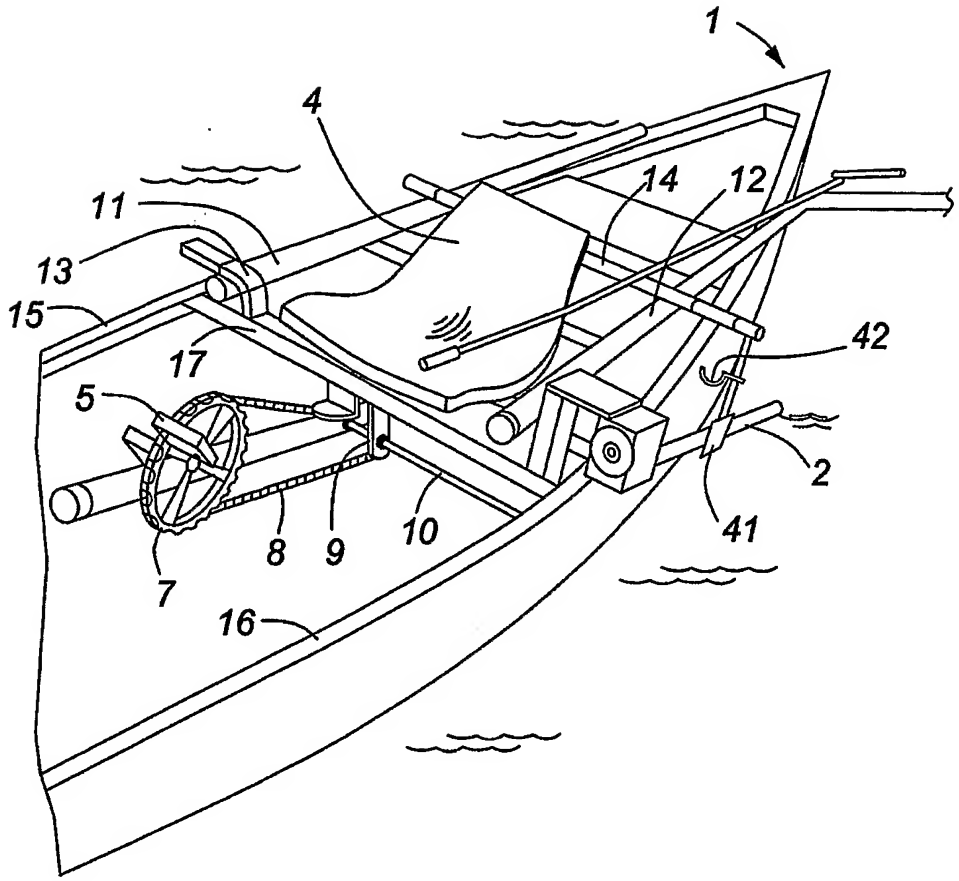


FIG. 2

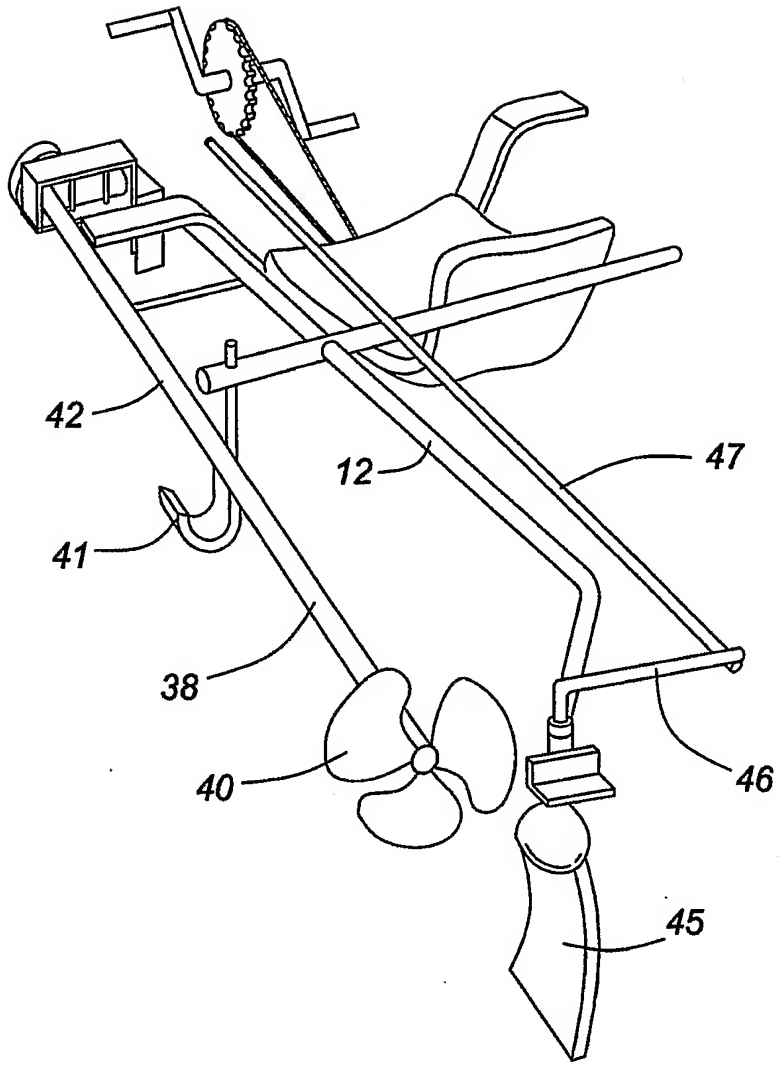


FIG. 3

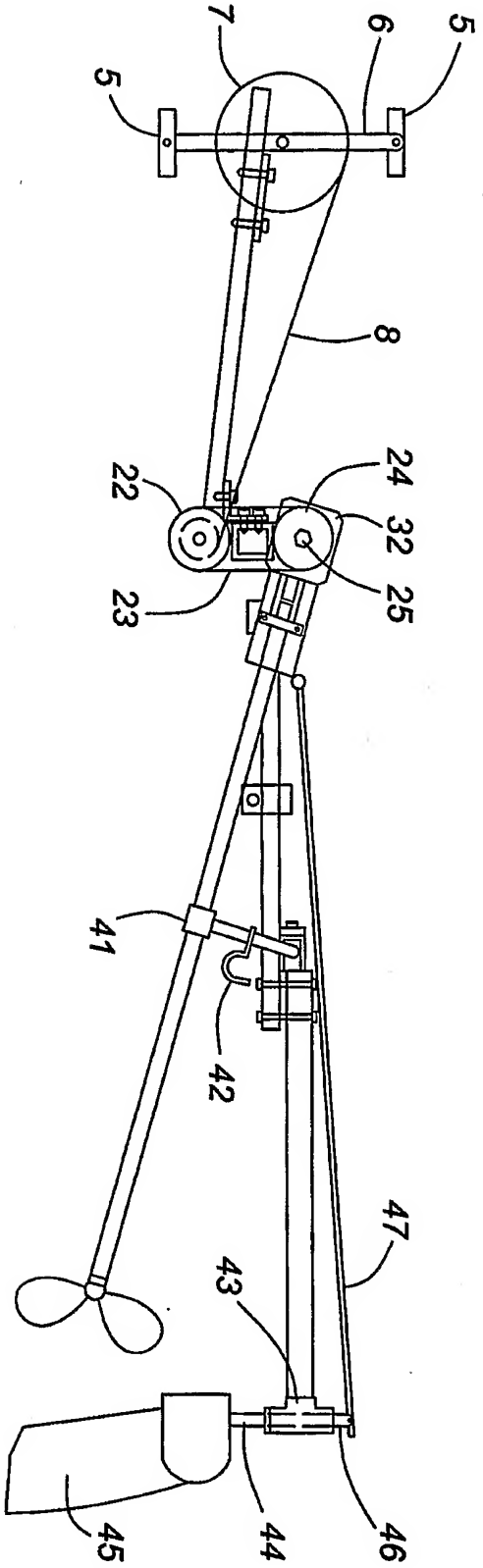


FIG. 4

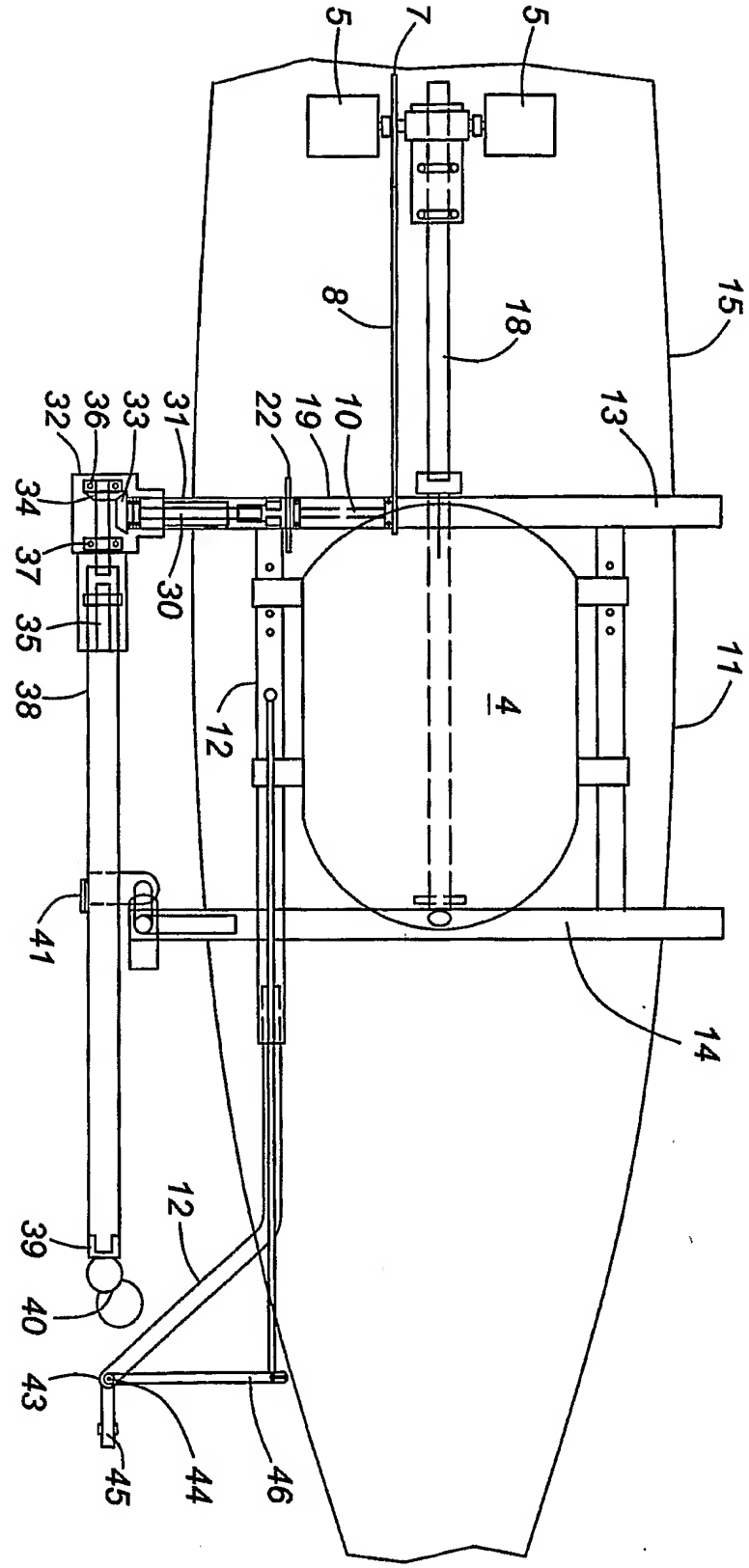
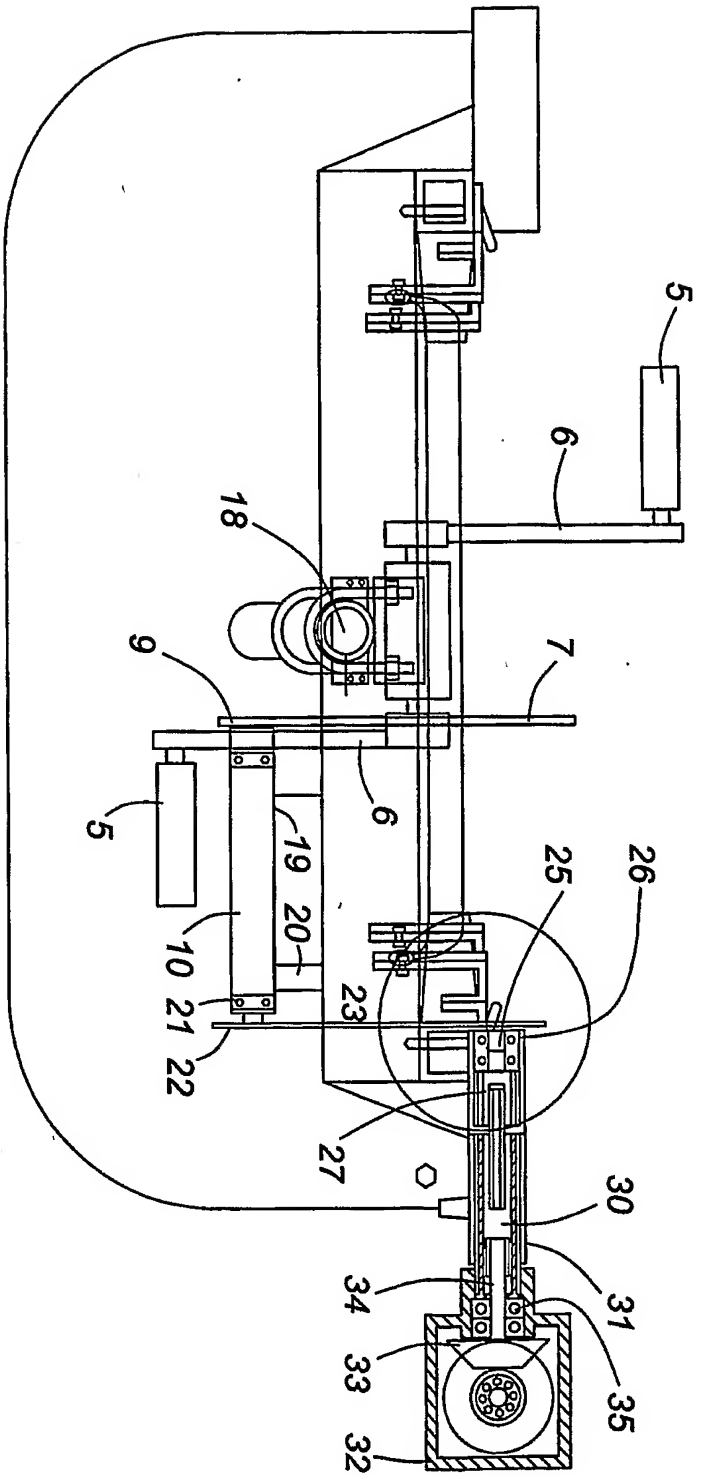


FIG. 5

FIG. 6



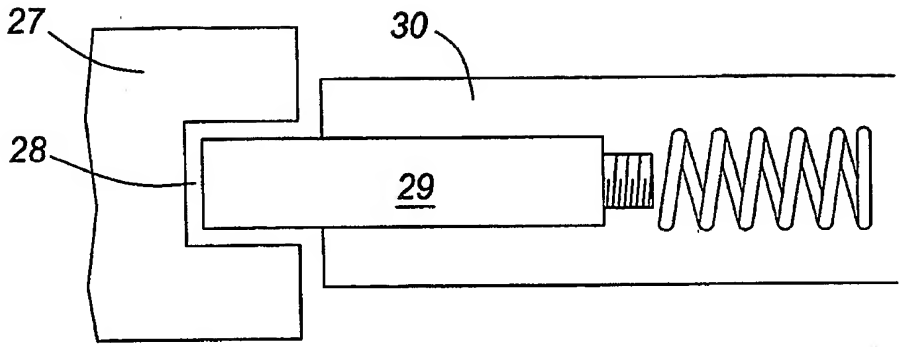


FIG. 7

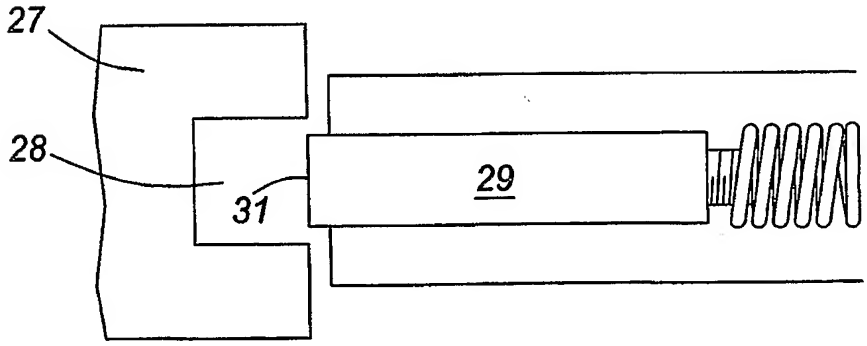


FIG. 8